



Briefing For: 40MM Industry Day

29 Jan 2004

ARDEC 40MM GRENADE 3D TDP CONVERSION EFFORT

PRESENTED BY:

RAYMOND COIRO

TEAM LEADER

DRAFTING ECP/ERR TEAM

CONFIGURATION MANAGEMENT - TECH DATA

rcoiro@pica.army.mil

973-724-3629

GOALS

- To create and provide to the PM a 3D Technical Data Package (TDP) available for competitive bid.
- Provide 3D Models and Drawings for the 40MM Family of Grenades in accordance with ARDEC 3D TDP Standards.
- Bring 3D Modeling Technology In-House (ARDEC) instead of out-sourcing to other facilities and contractors.

3D TDP Standards and Modeling

- All 3D Models and Drawings are being created using the policies set fourth by ARDEC for creating 3D TDP's.
- All modeling is being done in-house and two full-time contractor employees are assigned to the job.

Completed 3D TDP Deliverable for Contract

3D Technical Data Package

Consisting of:

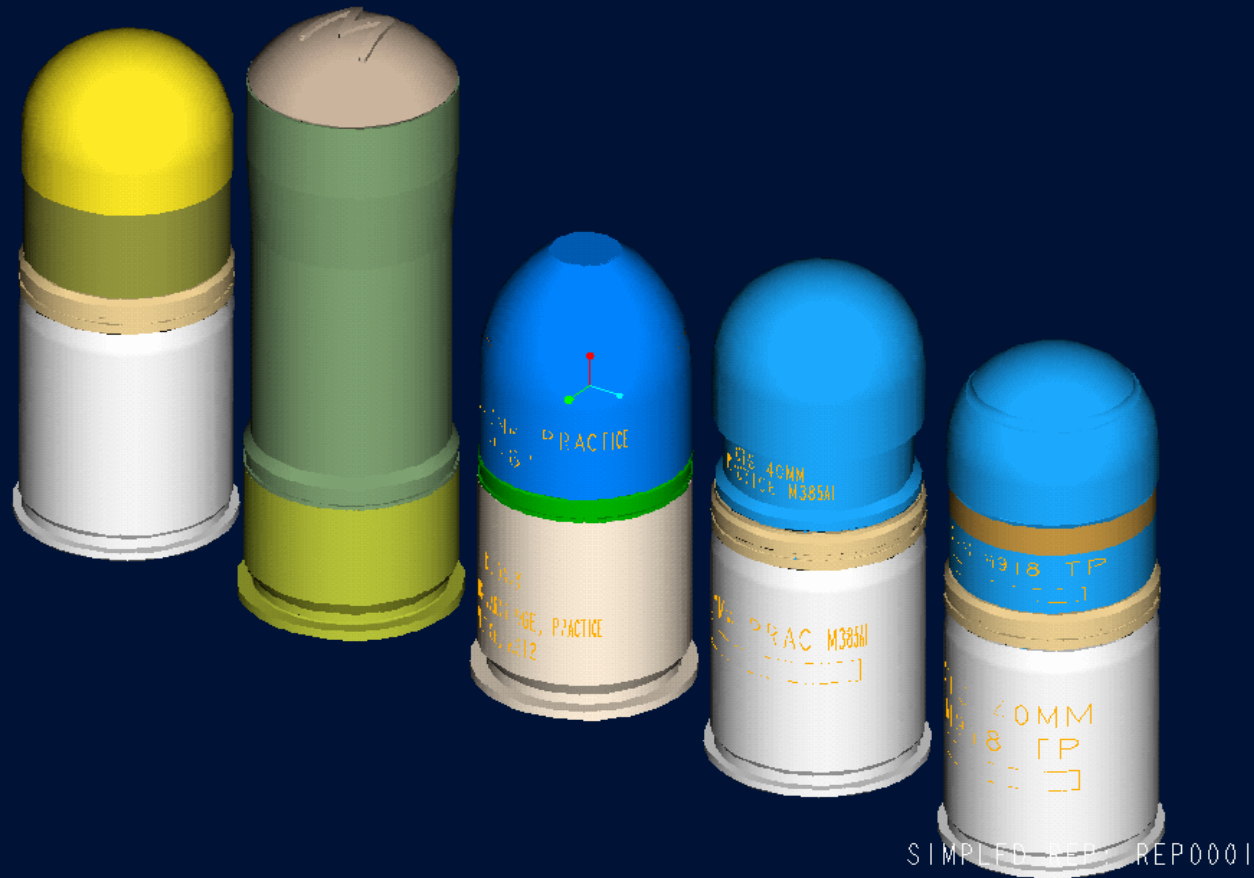
Disc One

1. PDF Format of all 2D ProE Drawings. (Contractually Binding)

Disc Two (Bonus Disc)

1. ProEngineer 3D Models and Drawings.
2. STEP format of all 3D Models.
3. VRML files of all 3D Models.

40MM Grenade Family



SIMPLED PART REP0001

X.X ± 0.1
X.XX ± 0.01
X.XXX ± 0.001
ANG. ± 0.5

40 MM 3D Conversion Status

- **M385A1 Practice**

3D Models/Detail Drawings, completed as scheduled for Engineering Review: November 5, 2003

- **M169 Cartridge Case**

3D Models/Detail Drawings, completed as scheduled for Engineering Review: November 5, 2003

- **M918 Practice**

3D Models/Detail Drawings, completed as scheduled for Engineering Review: December 3, 2003

- **M781 Practice**

3D TDP (Technical Data Package) completed and available for procurement from Tech Data.

40 MM 3D Conversions Status

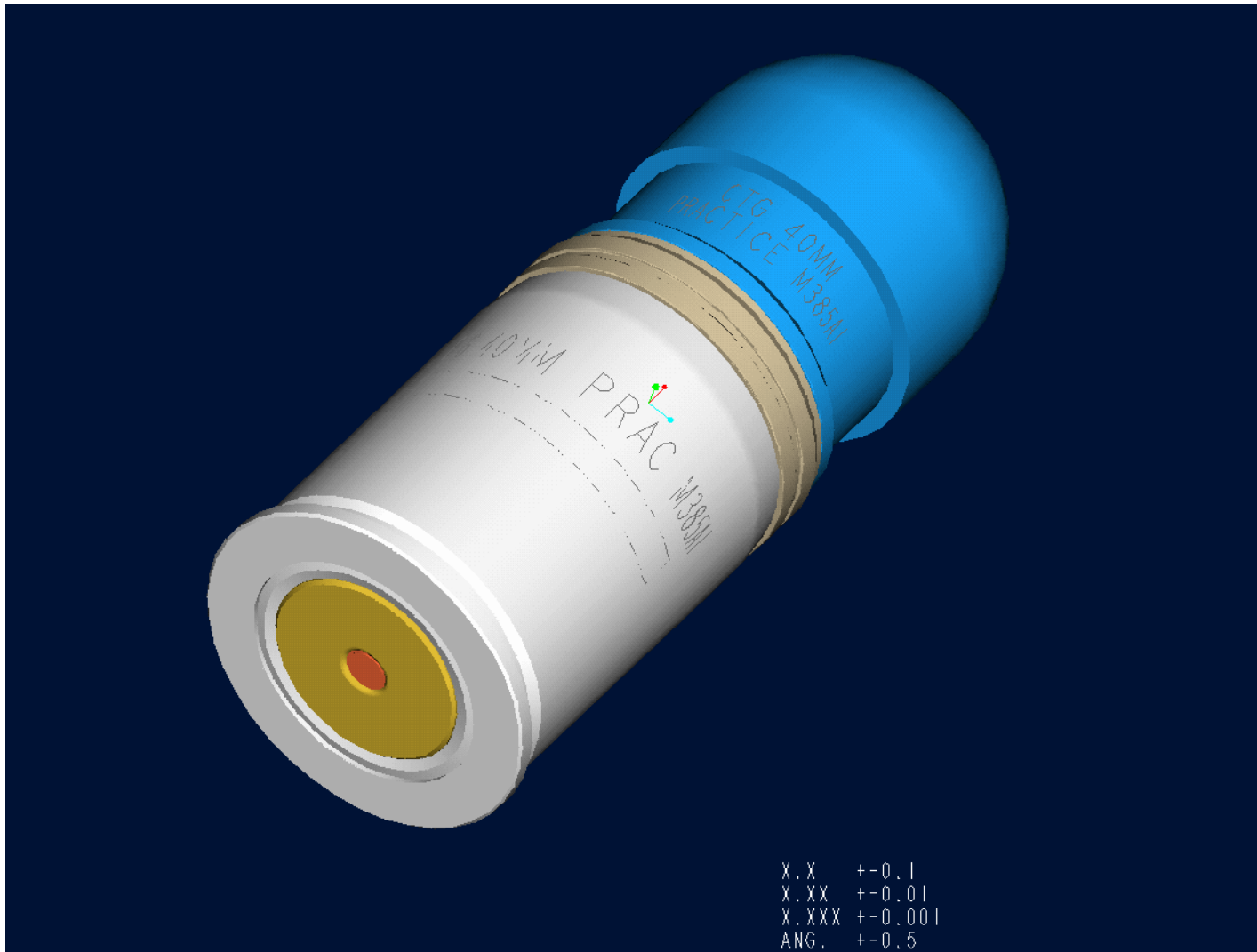
cont.

- **M583A1 White Star Para** *Scheduled completion date: Feb. 25th 2004*
3D Models WIP (work in progress), 25% completed.
Drawings WIP, 3% completed.
- **M16A2 40MM LINK** *Revised completion date: Feb. 11th 2004*
3D Models WIP, 90% completed.
Drawings WIP, 50% completed.
- **M430A1 HEDP** *Revised completion date: Feb. 11th 2004*
3D Models WIP, 75% completed.
Drawings WIP, 10% completed.
- **M433** *Scheduled completion date: Feb. 27th 2004*
3D Models/Detail Drawings are being completed at Rock Island Arsenal.
3D Models WIP, 75% completed.
Drawings WIP, 60% completed.

40MM, Practice, M385A1

- 3D Models/Drawings Completed as scheduled - 11/05/2003 for Engineering Review.

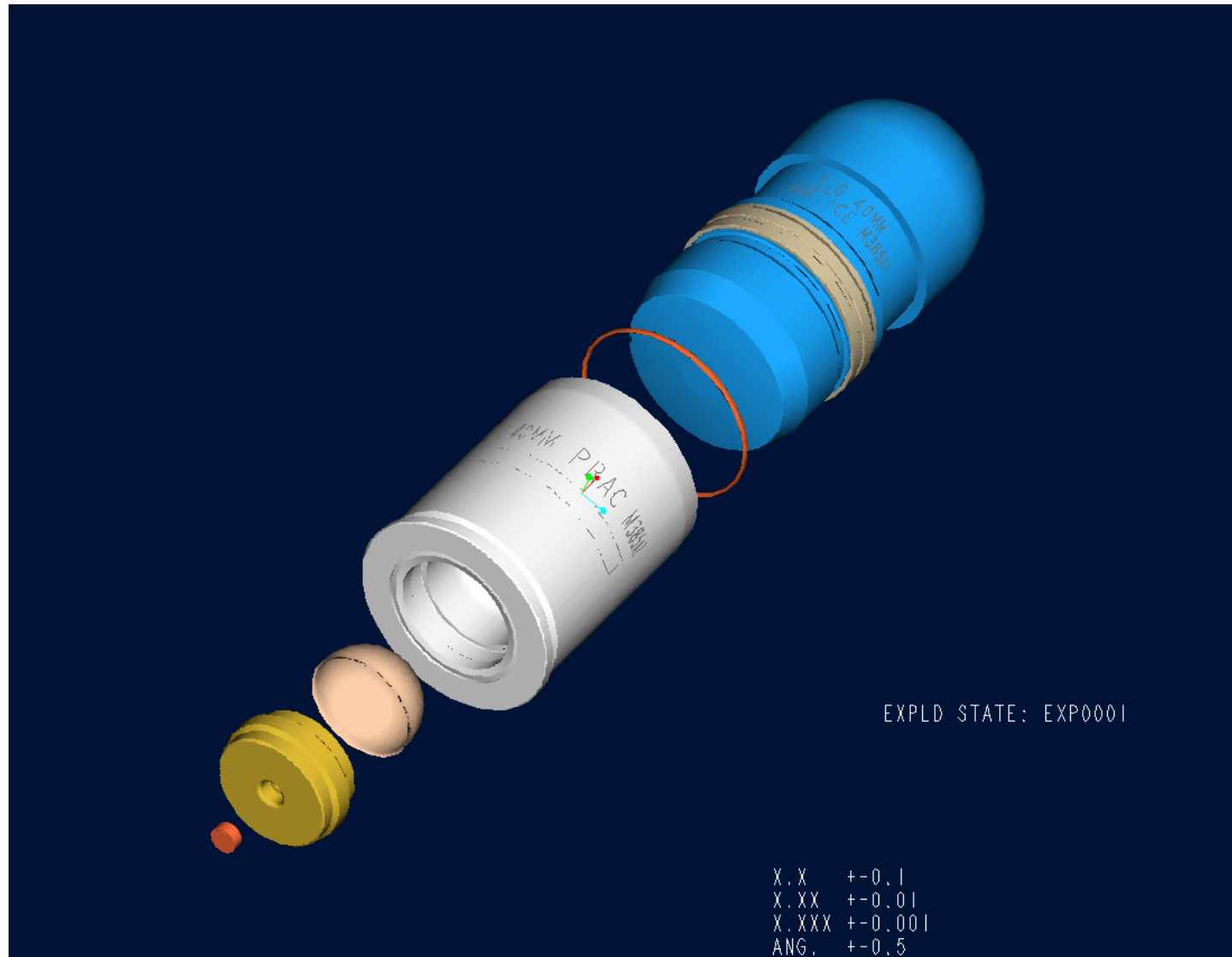
40MM, Practice, M385A1



40MM, M385A1, Practice

| DRAWING SIZE | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|-------------------------|--------------|----------|---|--|---|---|-----------|--|--|--|--|-----------|-------------|-------------|--------------|----------|---|---|-------------------------|------------|--|---|---|-------------------------|------------|----|---|---|-------------------------|------------|----|---|---|--|--|-----|
| <p>NOTES</p> <ol style="list-style-type: none"> 1. APPLICABLE STANDARDS/SPECIFICATIONS: A. ANSI Y14.5M-1982 B. MIL-A-2550 C. MIL-C-60944 2. ATTACH PROJECTILE ASSEMBLY TO CARTRIDGE CASE ASSEMBLY BY CRIMPING TO MEET NOTE 5. 3. PREVIOUS MARKINGS, NOT SHOWN, REMAIN. 4. MARK NOMENCLATURE AND LOT NUMBER WITH .1875 INCH HIGH LETTERS AND FIGURES USING YELLOW NO. 33538 OF FED-STD-595, STENCIL INK, TYPE I, SPEC A-4-208. 5. PROJECTILE SHALL WITHSTAND AN AXIAL TENSILE FORCE OF 800 Lbs WITHOUT COMPLETE SEPARATION FROM THE CARTRIDGE CASE. 6. UNTOLERANCED DIMENSIONS NEED NOT BE GAGED. 7. ASSEMBLY MUST FREELY ENTER CHAMBER GAGE. 8. ASSEMBLY TO MEET AIR PRESSURE REQUIREMENTS OF SPEC MIL-C-60944. 9. 10. MAXIMUM ALLOWABLE MOVEMENT OF BASE PLUG ON FIRING. 11. LINK CARTRIDGES IN ACCORDANCE WITH DRAWING 8886405. 12. .025 MAXIMUM GAP PERMITTED. 13. COMMERCIAL TALC MAY BE USED AS LUBRICATION ON O-RING, 12597686. | | | | | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">REVISIONS</th> </tr> <tr> <th>MODEL REV</th> <th>DRAWING REV</th> <th>DESCRIPTION</th> <th>DATE/REV-MOD</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td>-</td> <td>U</td> <td>NOR M385A1 / 1993-07-26</td> <td>1993-09-01</td> <td></td> </tr> <tr> <td>-</td> <td>V</td> <td>NOR M385A1 / 1996-11-26</td> <td>1997-01-23</td> <td>NO</td> </tr> <tr> <td>-</td> <td>W</td> <td>NOR M385A1 / 1997-06-04</td> <td>1997-07-18</td> <td>NO</td> </tr> <tr> <td>-</td> <td>T</td> <td></td> <td></td> <td>AMZ</td> </tr> </tbody> </table> | | REVISIONS | | | | | MODEL REV | DRAWING REV | DESCRIPTION | DATE/REV-MOD | APPROVED | - | U | NOR M385A1 / 1993-07-26 | 1993-09-01 | | - | V | NOR M385A1 / 1996-11-26 | 1997-01-23 | NO | - | W | NOR M385A1 / 1997-06-04 | 1997-07-18 | NO | - | T | | | AMZ |
| | REVISIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MODEL REV | DRAWING REV | DESCRIPTION | DATE/REV-MOD | APPROVED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | U | NOR M385A1 / 1993-07-26 | 1993-09-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | V | NOR M385A1 / 1996-11-26 | 1997-01-23 | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | W | NOR M385A1 / 1997-06-04 | 1997-07-18 | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | T | | | AMZ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>ITEM OR FIND NO.</p> <p>QTY.</p> <p>REQ.</p> <p>CAGE CODE</p> <p>PART NO. OR IDENTIFYING NO.</p> <p>NOMENCLATURE OR DESCRIPTION</p> <p>REMARKS</p> | | | | | | <p>DESIGN ACTIVITY</p> <p>US ARMY PACAF/AFMPC PACAF/AFMPC PACAF/AFMPC</p> <p>CARTRIDGE 40MM PRACTICE, M385A1</p> <p>PART NO. 8886326</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>MECHANICAL PROPERTIES</p> <p>YF 12934554</p> <p>TS 32 H05/L02/P4129 CAN</p> <p>BLZ 9370125</p> <p>FA 48 H05/L02/M548 CAN</p> <p>BN 9381593</p> <p>50 H05/L02/M003 BOX</p> <p>WH NEXT ASSY USED ON</p> <p>APPLICATION</p> | | | | | | <p>DO NOT SCALE DRAWING</p> <p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES ON ANGLES ± °</p> <p>2 PLACE DECIMALS</p> <p>3 PLACE DECIMALS</p> <p>THIRD ANGLE PROJECTION</p> <p>NAT. ENGR</p> <p>MODELED BY</p> <p>DESIGN APPROVAL</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>DISTRIBUTION STATEMENT A</p> <p>APPROVED FOR PUBLIC RELEASE:</p> <p>DISTRIBUTION IS UNLIMITED.</p> | | | | | | <p>SCALE</p> <p>2/1</p> <p>DATE</p> <p>9-198</p> <p>SHEET</p> <p>1 OF 1</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

M385A1 Exploded View

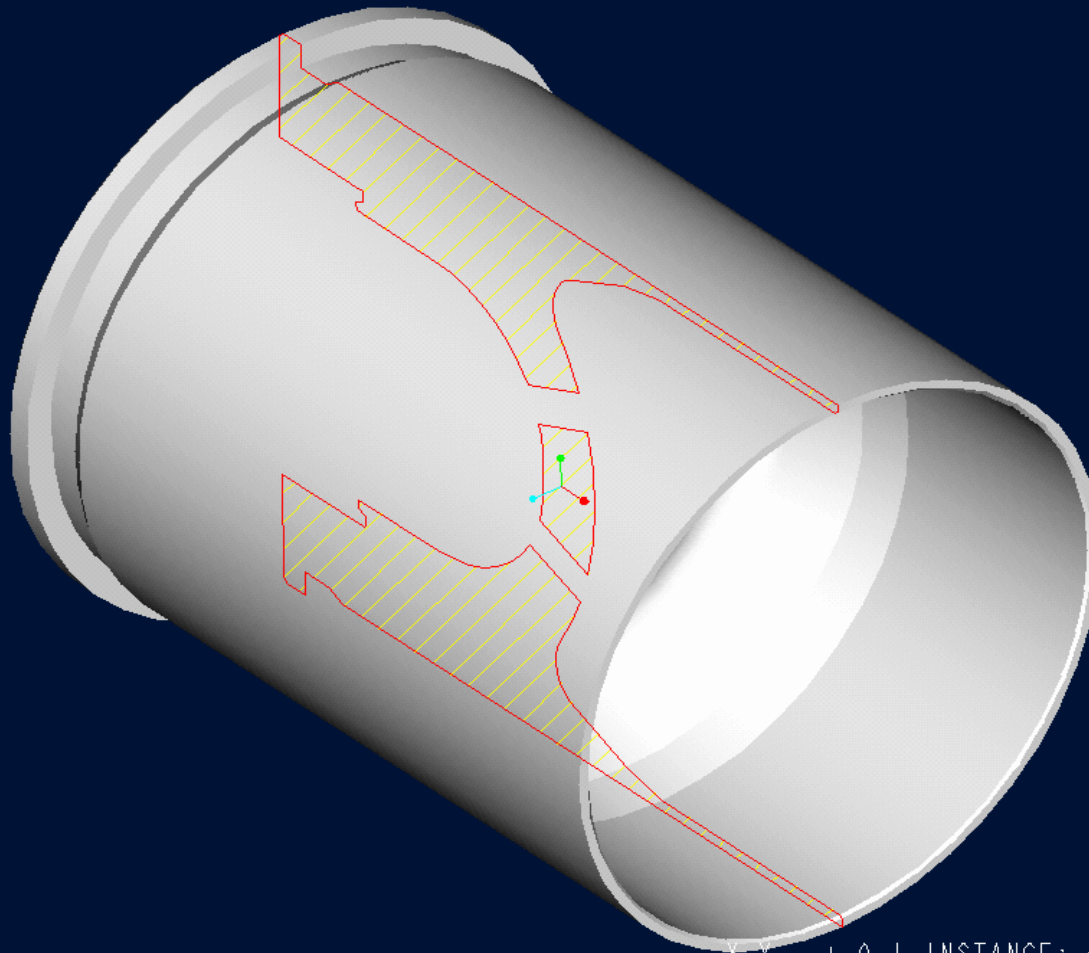


40MM, M169 CARTRIDGE CASE

Used in M385A1

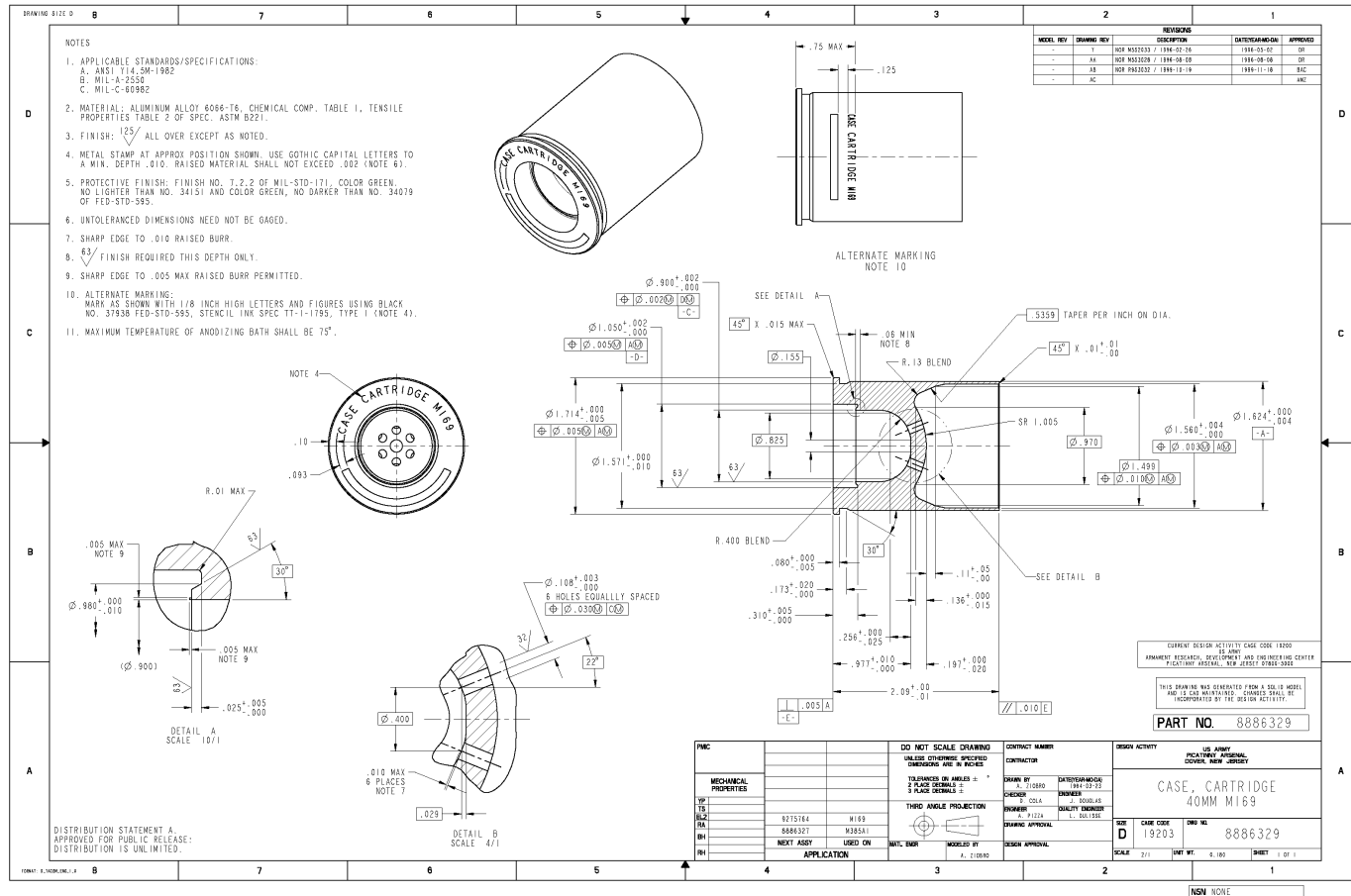
3D Models/Drawings
Completed as scheduled -
11/05/2003 for Engineering
Review.

M169 Cartridge Case



X.X +-0.1 INSTANCE: GENERIC
X.XX +-0.01
X.XXX +-0.001
ANG. +-0.5

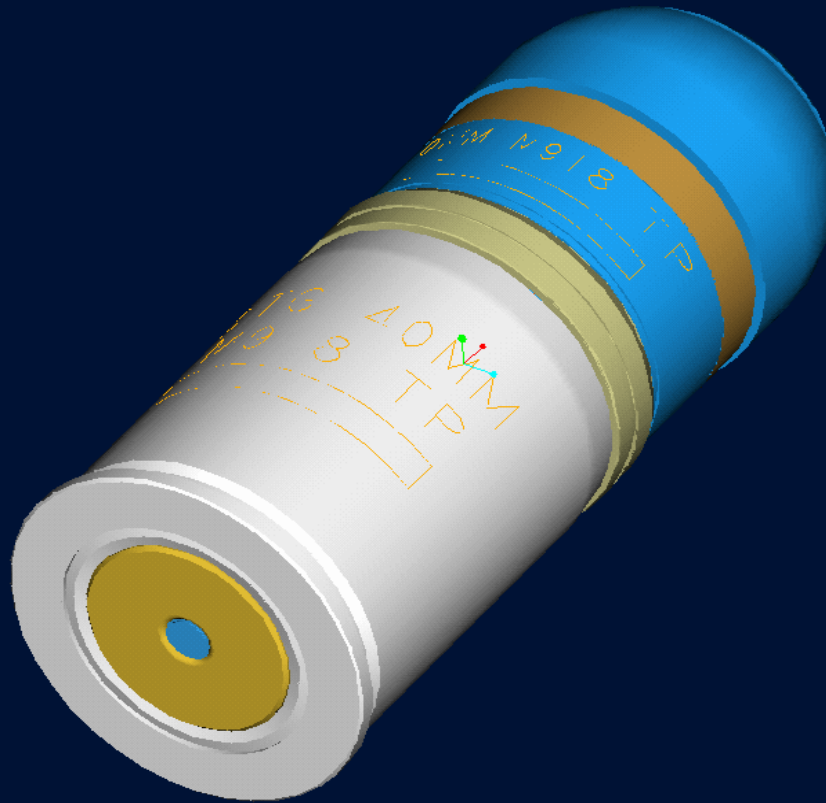
Case, Cartridge 40MM M169 for M385A1



40MM, Practice, M918

- 3D Models/Drawings Completed as scheduled - 12/03/2003 for Engineering Review.

40MM, Practice, M918

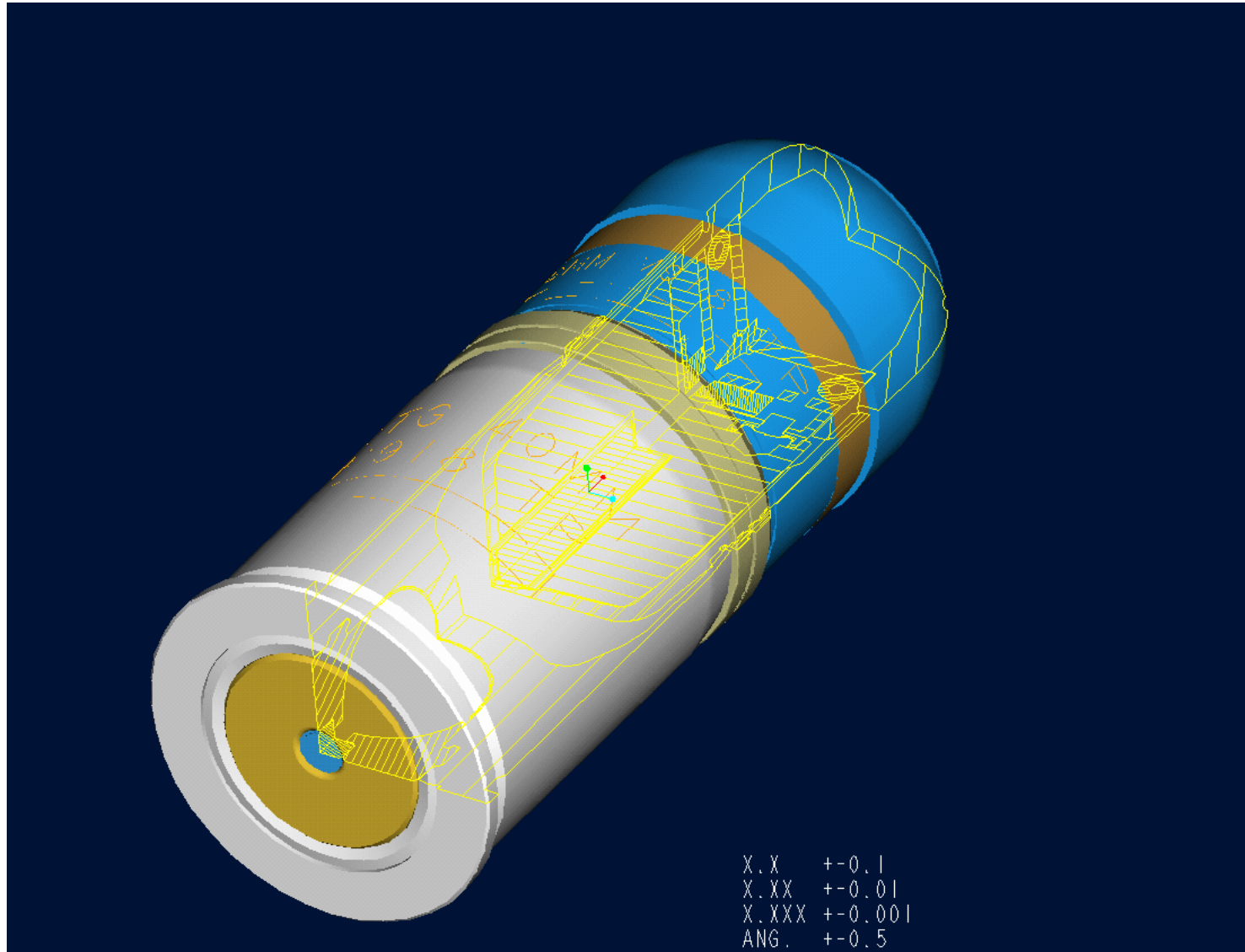


X.X +-0.1
X.XX +-0.01
X.XXX +-0.001
ANG. +-0.5

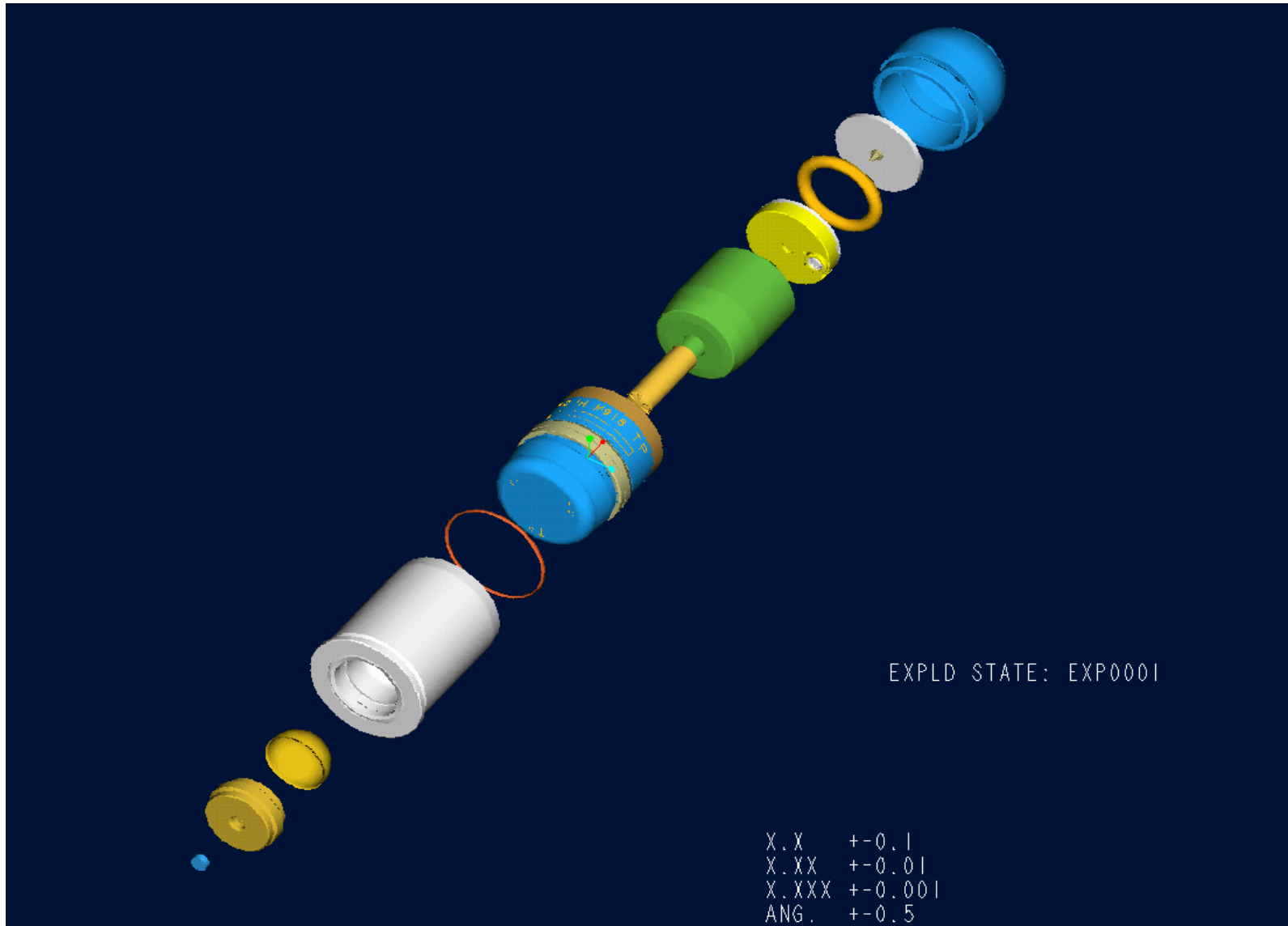
40MM, Practice, M918

[illegible]

M918 Cross Section



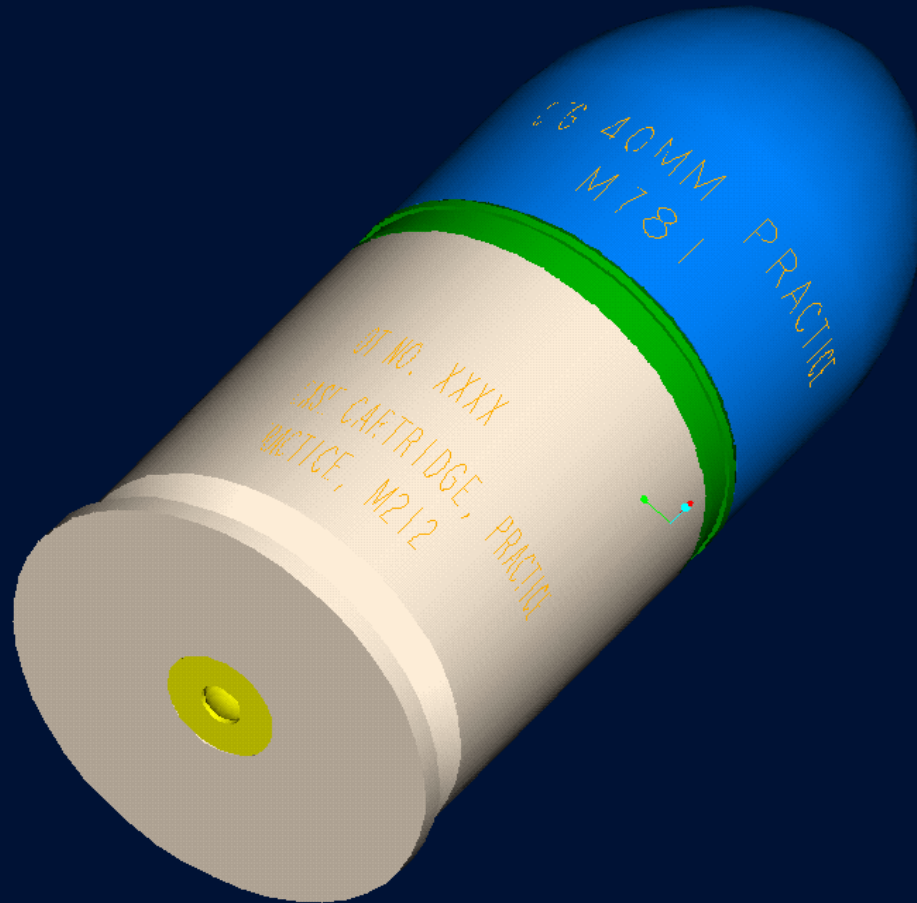
M918 Exploded View



40MM, Practice, M781

- 3D Models/Drawings have been released for Tech Data and are available for 3D TDP.

40MM, Practice, M781

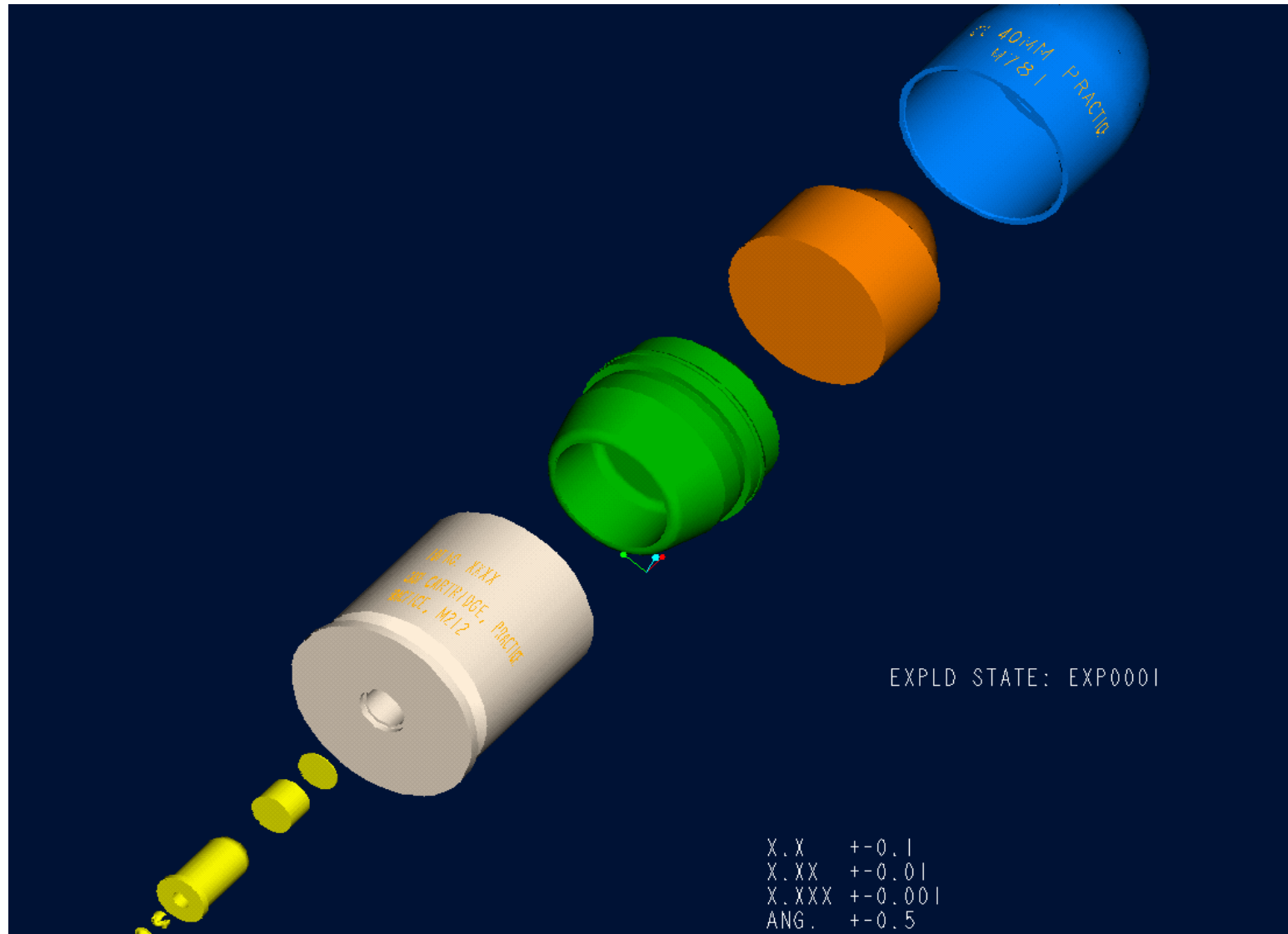


X.X +-0.1
X.XX +-0.01
X.XXX +-0.001
ANG. +-0.5

40MM, M781, Practice

| DRAWING SIZE | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------------|----------------------------|---|-----------------------------|---------|--|---|-----------|-----------|-----------------------------|-----------------------------|-----------|-------------|-------------|----------------------------|-----|-----------------|--------------------------|------------|---|-------|--------------------------|---|------------|---|--------------------------|----------------|---------|-----------------------------------|--------------------------|----------------|---|---|--------------------------|----------------|
| NOTES | <p>1. APPLICABLE STANDARDS/SPECIFICATIONS: A. ANSI Y14.5-1973 B. MIL-A-2550 C. DTL9322240 (CHARACTERISTICS NOTED AS <u>M4</u>)</p> <p>2. ADHESIVE CEMENT: POLYSULFIDE RUBBER, PART NO. 9322244.....100 PARTS BY WEIGHT CURING AGENT, PART NO. 9322243.....20 PARTS BY WEIGHT SILICA MIL-S-14760.....2 PARTS BY WEIGHT ADVISORY.</p> <p>3. A PARTIAL .015 MAX GAP IS PERMITTED PROVIDED THE GAP DOES NOT PREVENT FULLY ASSEMBLED CARTRIDGE FROM MEETING THE CHAMBER GAGE REQUIREMENT. THE GAP SHALL NOT EXCEED 25% OF THE PERIPHERY. <u>M203</u></p> <p>4. MARK WITH INK, MARKING, STENCIL, OPAQUE, TYPE I, COLOR WHITE NO. 37875, SPEC A-A-208. USE OF A-A-208, TYPE IV PERMISSIBLE WHEN USING A ROLLER MARKING MACHINE TO MARK CARTRIDGE. <u>M202</u></p> <p>5. THIS ASSEMBLY MUST FREELY ENTER THE CHAMBER GAGE. <u>M102</u></p> <p>6. TOTAL WEIGHT OF CARTRIDGE TO BE 205 +/-4 GRAMS. <u>M103</u></p> <p>7. IN LIEU OF 9310345-1, ALTERNATE PROJECTILE ASSEMBLY 9310345-2 MAY BE USED.</p> | | | | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">REVISIONS</th> </tr> <tr> <th>MODEL REV</th> <th>DRAWING REV</th> <th>DESCRIPTION</th> <th>DATE/YEAR/MO/DA / APPROVED</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>B</td> <td>NOR R022031 / 2000-08-17</td> <td>2000-09-25</td> </tr> <tr> <td>-</td> <td>T</td> <td>NOR R203004 / 2002-02-11</td> <td>2002-05-29 RJC</td> </tr> <tr> <td>A</td> <td>U</td> <td>NOR R202034 / 2002-10-11</td> <td>2002-11-19 BAC</td> </tr> <tr> <td>B</td> <td>V</td> <td>NOR R202034 / 2002-02-26</td> <td>2003-02-26 BLV</td> </tr> <tr> <td>C</td> <td>W</td> <td>NOR R302048 / 2003-05-06</td> <td>2003-06-06 BAC</td> </tr> </tbody> </table> | | REVISIONS | | | | MODEL REV | DRAWING REV | DESCRIPTION | DATE/YEAR/MO/DA / APPROVED | N/A | B | NOR R022031 / 2000-08-17 | 2000-09-25 | - | T | NOR R203004 / 2002-02-11 | 2002-05-29 RJC | A | U | NOR R202034 / 2002-10-11 | 2002-11-19 BAC | B | V | NOR R202034 / 2002-02-26 | 2003-02-26 BLV | C | W | NOR R302048 / 2003-05-06 | 2003-06-06 BAC |
| | | | | | | | REVISIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MODEL REV | DRAWING REV | DESCRIPTION | DATE/YEAR/MO/DA / APPROVED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N/A | B | NOR R022031 / 2000-08-17 | 2000-09-25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | T | NOR R203004 / 2002-02-11 | 2002-05-29 RJC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | U | NOR R202034 / 2002-10-11 | 2002-11-19 BAC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | V | NOR R202034 / 2002-02-26 | 2003-02-26 BLV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | W | NOR R302048 / 2003-05-06 | 2003-06-06 BAC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | | | | | | | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ITEM OR FIND NO.</th> <th>QTY. REQ.</th> <th>CAGE CODE</th> <th>PART NO. OR IDENTIFYING NO.</th> <th>NOMENCLATURE OR DESCRIPTION</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>AR</td> <td>-</td> <td>N/A</td> <td>ADHESIVE CEMENT</td> <td>SEE NOTE 2</td> </tr> <tr> <td>2</td> <td>I</td> <td>19200</td> <td>9310345-1</td> <td>PROJECTILE ASSEMBLY 40MM PRACTICE ROUND</td> <td>SEE NOTE 7</td> </tr> <tr> <td>1</td> <td>I</td> <td>19200</td> <td>9322239</td> <td>CARTRIDGE CASE LOADING ASSY, M212</td> <td></td> </tr> </tbody> </table> | | | | | | ITEM OR FIND NO. | | QTY. REQ. | CAGE CODE | PART NO. OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | REMARKS | 3 | AR | - | N/A | ADHESIVE CEMENT | SEE NOTE 2 | 2 | I | 19200 | 9310345-1 | PROJECTILE ASSEMBLY 40MM PRACTICE ROUND | SEE NOTE 7 | 1 | I | 19200 | 9322239 | CARTRIDGE CASE LOADING ASSY, M212 | | A | | | | |
| | ITEM OR FIND NO. | QTY. REQ. | CAGE CODE | PART NO. OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | REMARKS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | AR | - | N/A | ADHESIVE CEMENT | SEE NOTE 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | I | 19200 | 9310345-1 | PROJECTILE ASSEMBLY 40MM PRACTICE ROUND | SEE NOTE 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | I | 19200 | 9322239 | CARTRIDGE CASE LOADING ASSY, M212 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p style="text-align: center;">DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

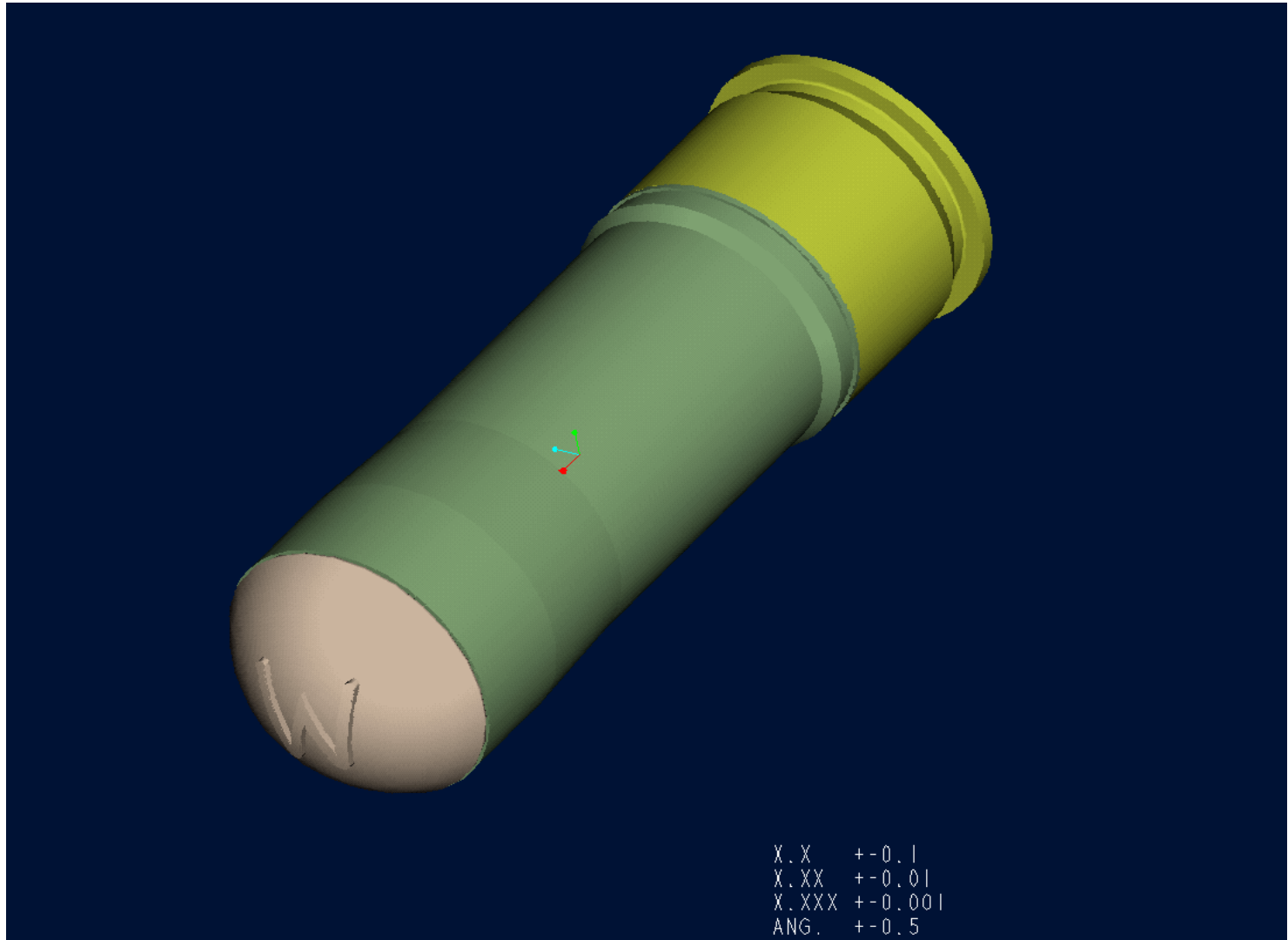
M781 Exploded View



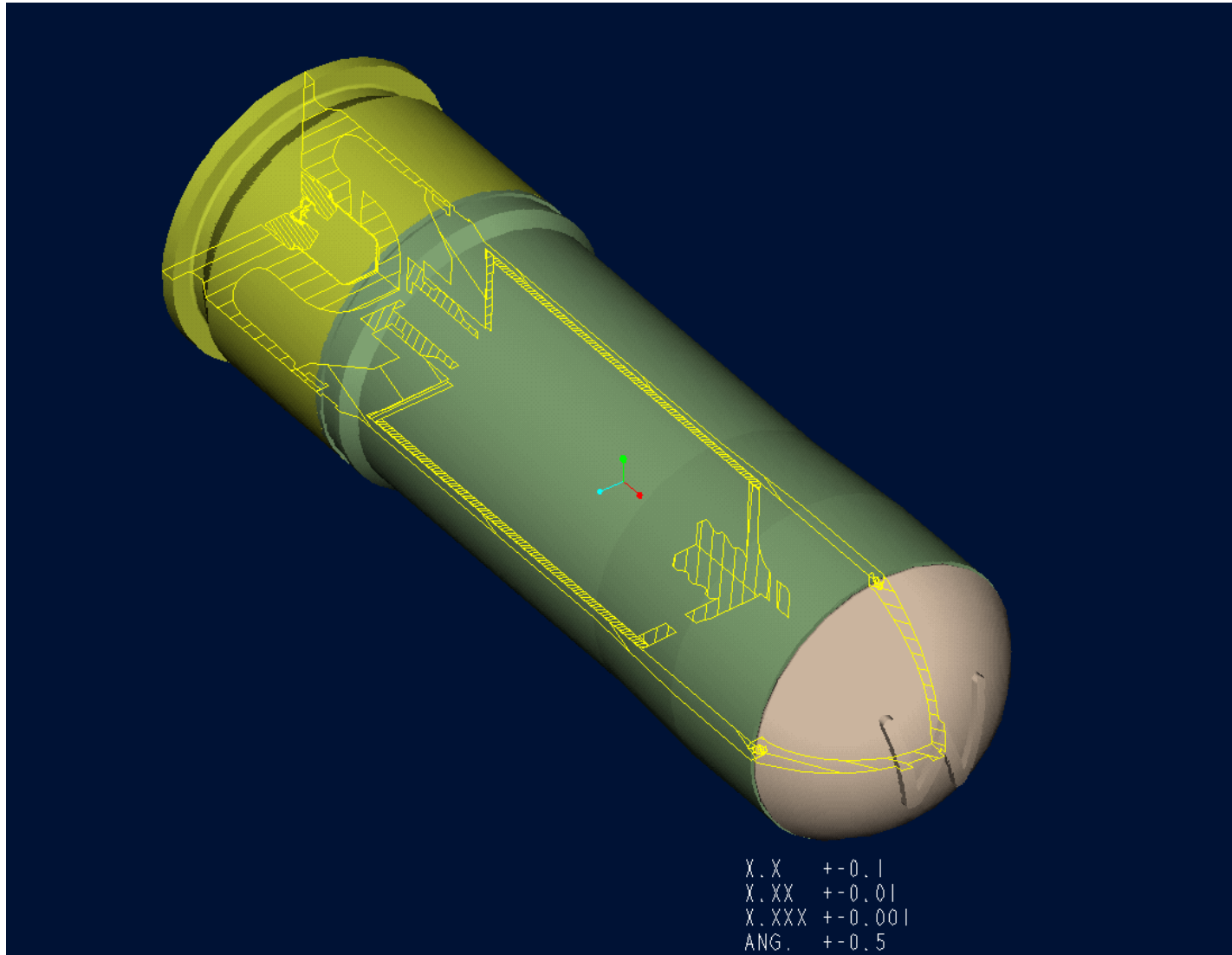
40MM, M583A1 White Star Para

- Scheduled Completion Date
02/25/2004 for 3D Models/Drawings
for Engineering Review.

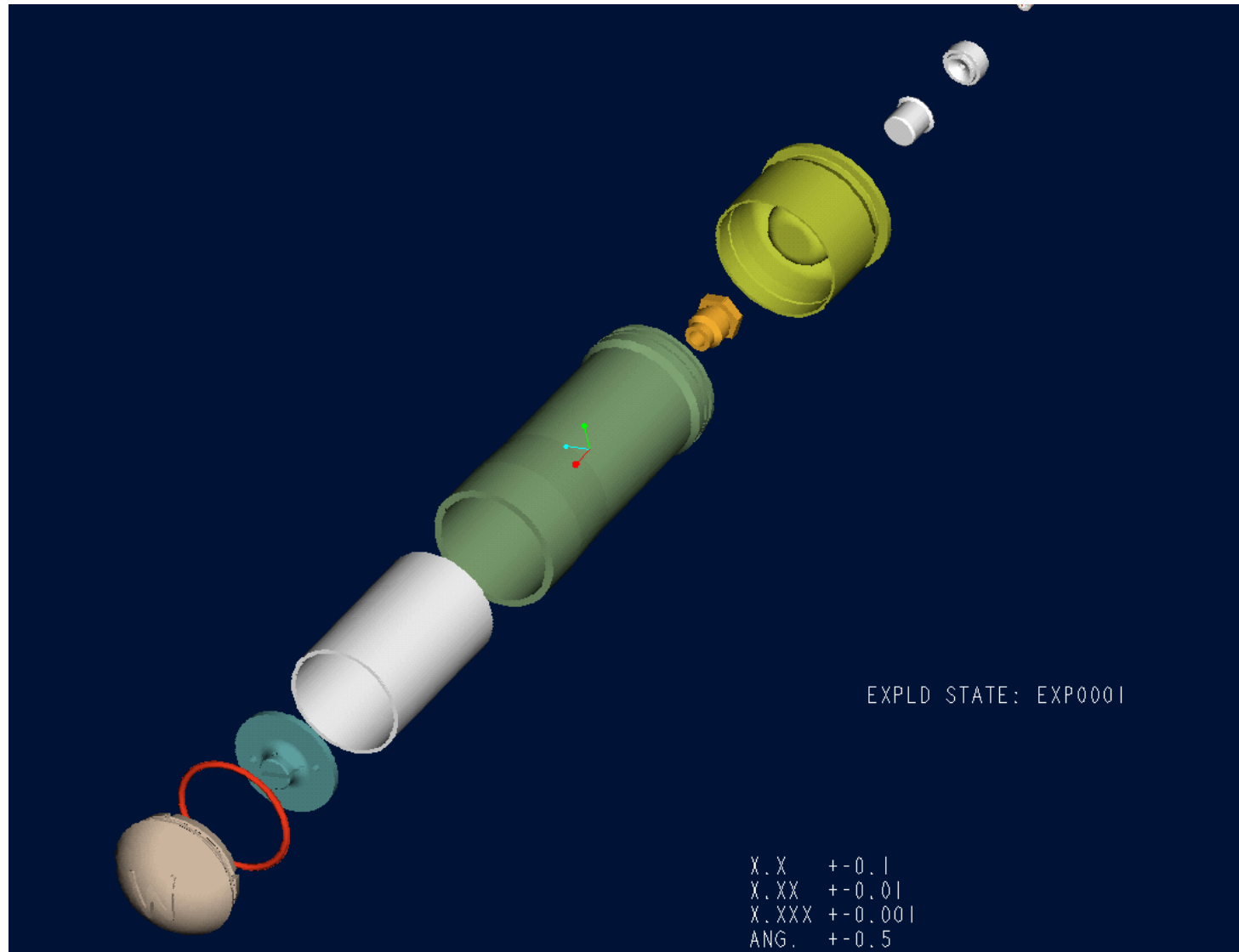
40MM, M583A1, White Star Para



M583A1 Cross-Section



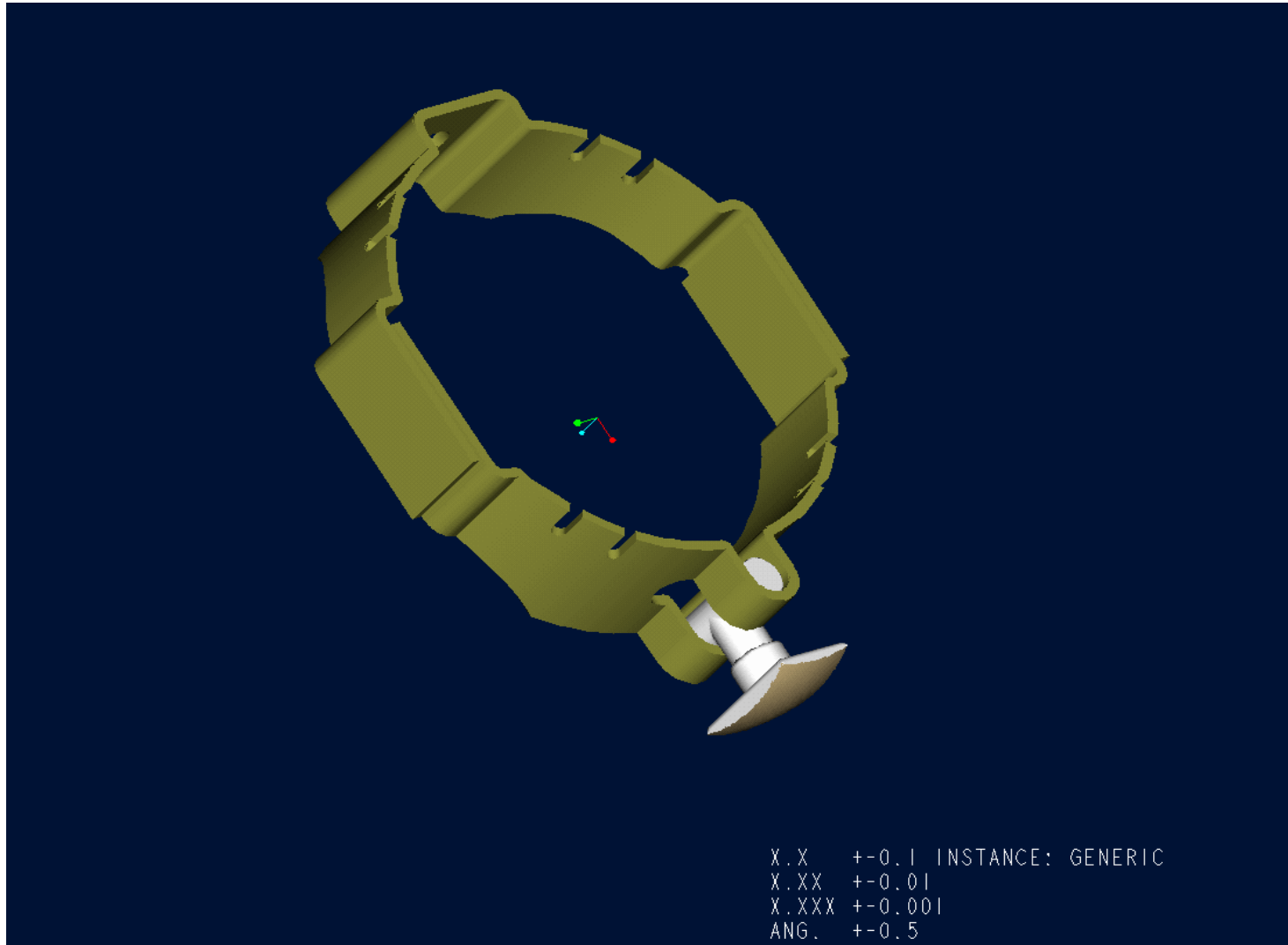
M583A1 Exploded View



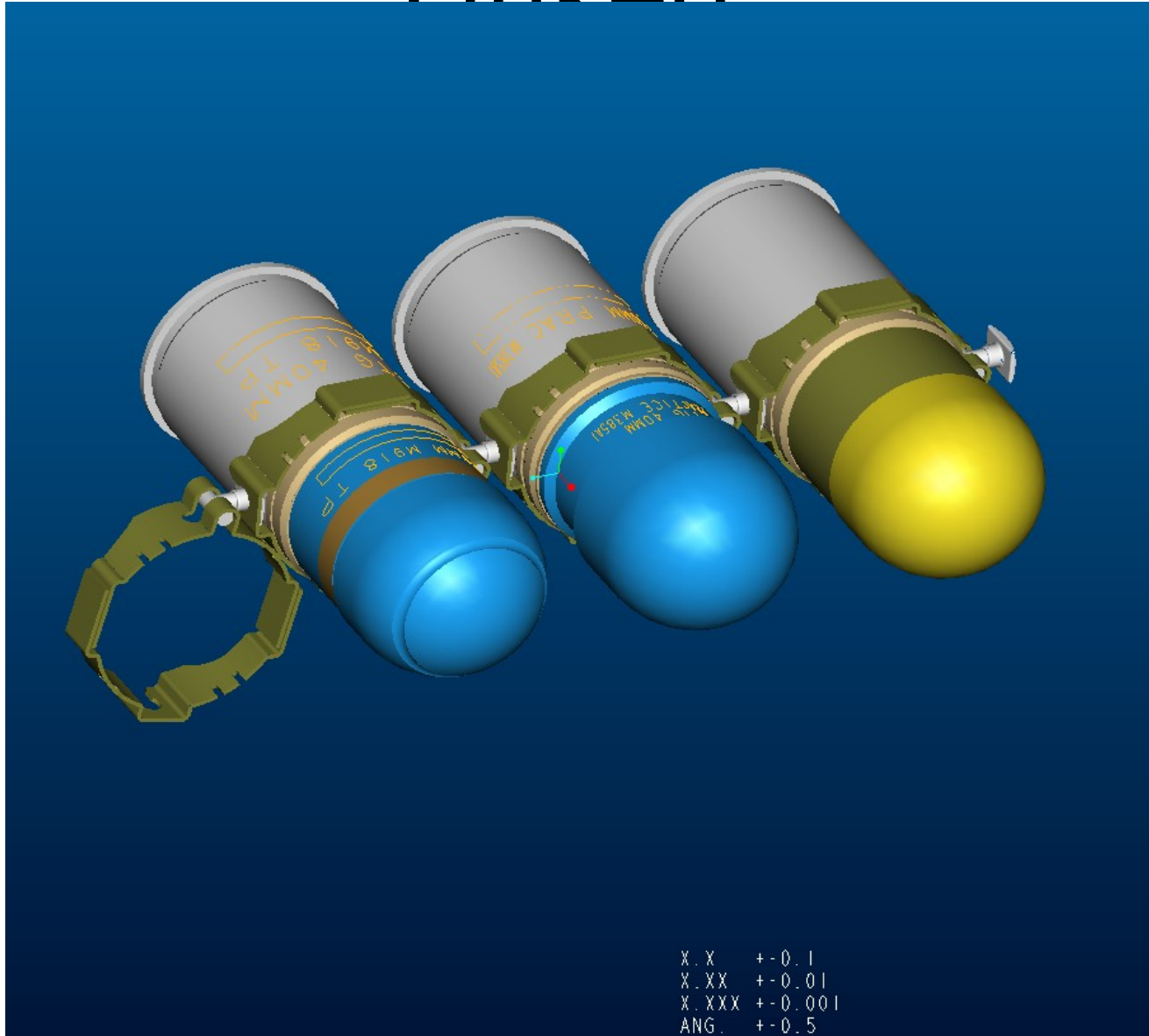
40MM, M16A2 Grenade Link

- Scheduled Completion Date 02/11/2004 for 3D Models/Drawings for Engineering Review.

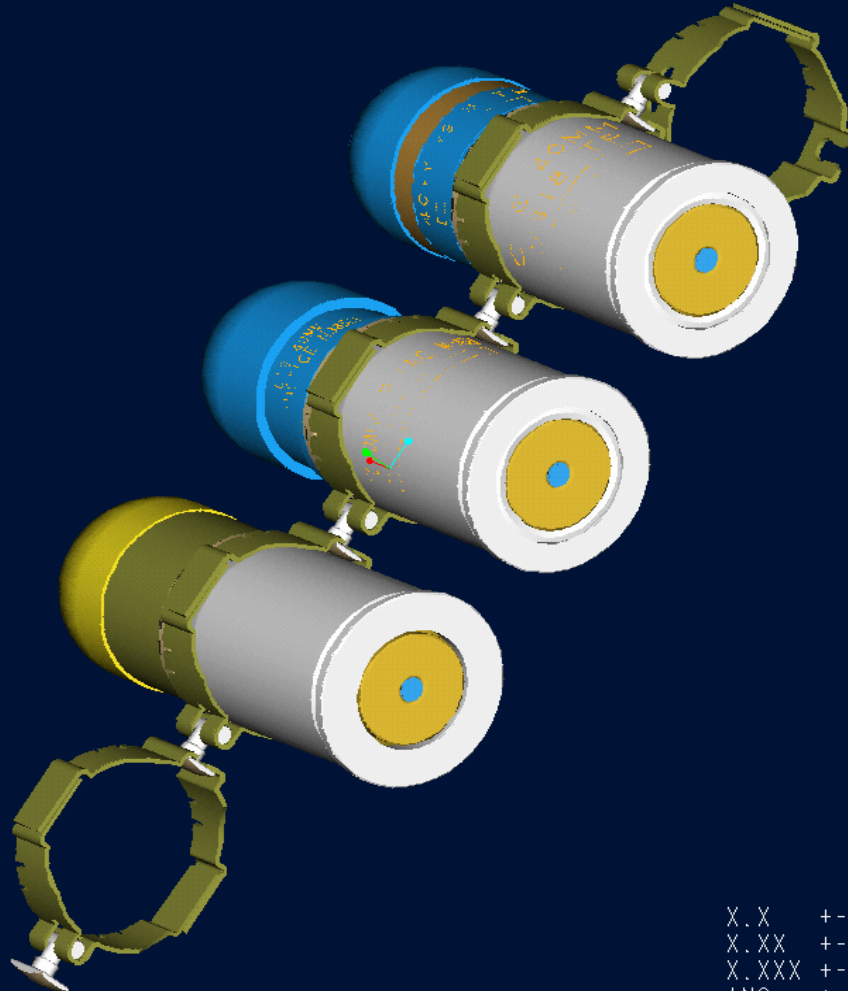
40MM, M16A2 Grenade Link



40MM, M16A2 Grenade Linked



40MM, M16A2 Grenade Linked

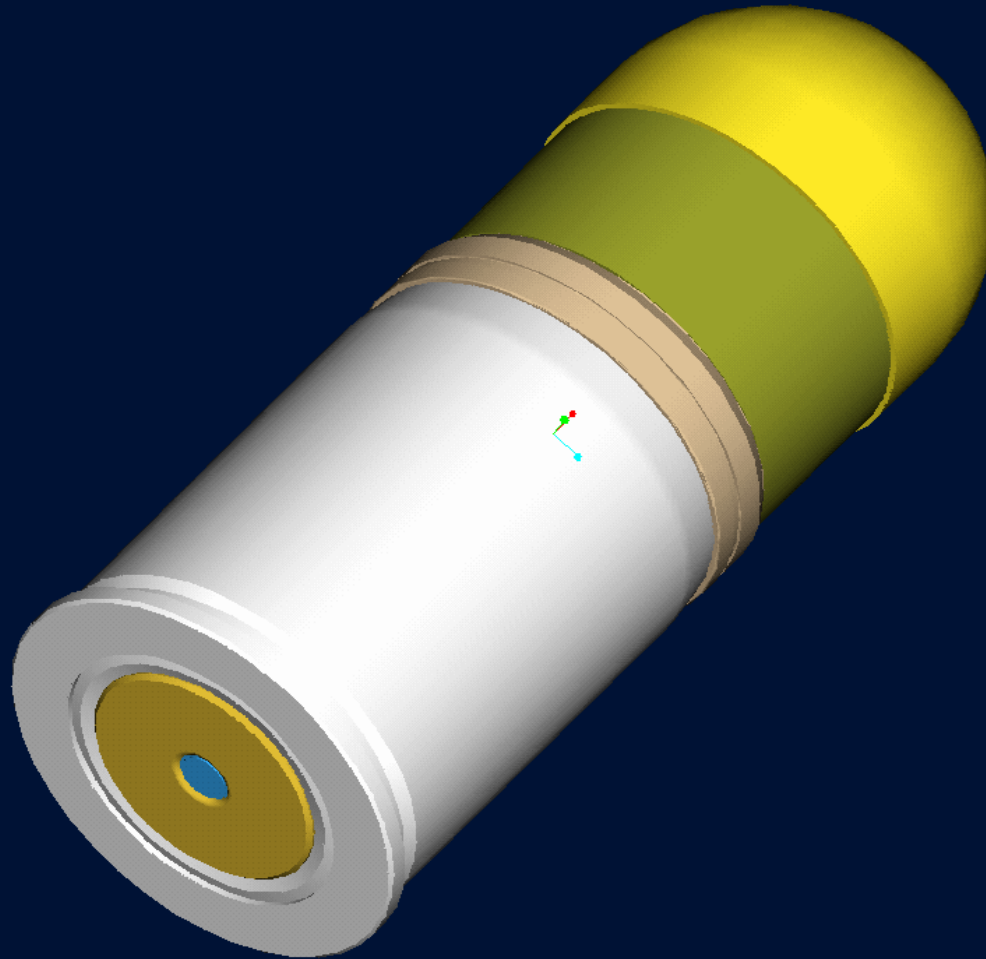


X.X +-0.1
X.XX +-0.01
X.XXX +-0.001
ANG. +-0.5

40MM, M430A1 HEDP

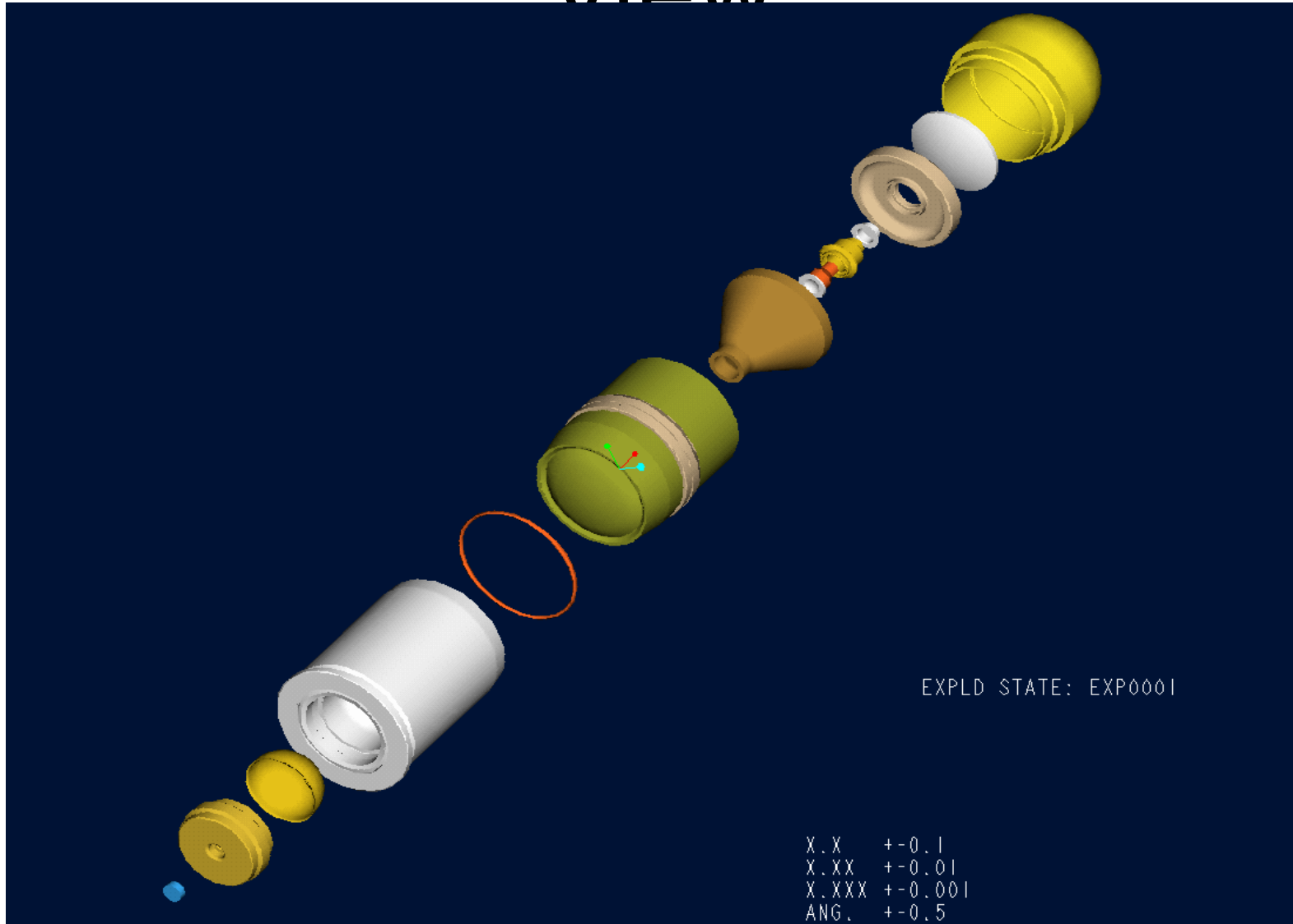
- Scheduled Completion Date 02/11/2004 for 3D Models/Drawings for Engineering Review.

40MM, M430A1 HEDP



X.X +-0.1
X.XX +-0.01
X.XXX +-0.001
ANG. +-0.5

40MM M430A1 Exploded view



CONCLUSION

- To make the PM and Customers happy by providing an up-to-date 3D TDP and passing on the 3D Technology to the PM and customer.

Questions

- Raymond Coiro
(973) 724-3629
DSN 880-3629
rcoiro@pica.army.mil